

SUMMARY TABLE OF ECONOMIC DATA AND METHODOLOGIES

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Data Item	Master List Business (Com, Ind, Pub) Survey Form Returned	Master List Business (Com,Ind,Pub) Survey Form Not Returned	Rest of Study Area Com, Ind, Pub	Rest of Study Area Warehouse (based on square footage of warehouse space per block or partial block, or parcel, if at same elevation and not unique)	Residential (based on groups of like structures at the same elevation in a square block or partial block unless unique)	
Levee Unit/River Mile	R.M. (in tenths) assigned from levee unit map and building footprint as identified in windshield survey	R.M. (in tenths) assigned from levee unit map and building footprint as identified in windshield survey	R.M.(in tenths) assigned from levee unit map and building footprint as identified in windshield survey	R.M. (in tenths) from levee unit map and building footprints in square block of warehouse development as identified in EFS Phase 1 notes and EFS Phase 2 Task 3 windshield survey	R.M. (in tenths) from levee unit map, building footprints and block number identified in residential windshield survey	
Building Number	Assigned building footprint # from map combined w/levee abbrev., or one # was assigned for a group of bldgs.	Assign building footprint # from map, combined w/ levee abbrev., or one # is assigned for a group of bldgs.	Assign building footprint # from map, combined w/ levee abbrev., or one # is assigned for a group of bldgs.	Number assigned for each individual structure, block or group of warehouse development located at the same elevation	Block or partial block of residential structures identified/numbered on study area maps during residential windshield survey	
Damage Category (Com, Ind, Pub, Res)	Selected based on name or nature of business as provided in survey form	Selected based on name or nature of business from EFS Phase 1 field notes; verified in Phase 2 Task 2 visual observation	Visual observation during EFS Phase 2 Task 3 windshield survey; comparison to similar businesses in the study area	Warehouse as determined in EFS Phase 2 Task 3 windshield survey and EFS Phase 1 notes	All residential	
No. of Bldgs on site	As identified in survey form	As identified in EFS Phase 1 or Phase 2 Task 2 windshield survey and in conjunction with study area maps, building footprints, parcels	As identified in EFS Phase 2 Task 3 windshield survey and in conjunction with study area maps,building footprints, parcels	As identified in EFS Phase 2 Task 3 windshield survey and in conjunction with study area maps, building footprints, parcels	N/Agarage included in structure value	
Structure ground dmg elev	Survey form or study area map building footprint, contour lines, and spot elevations	Study area map building footprint, contour lines, and spot elevations	Study area map building footprint, contour lines, and spot elevations	Study area map building footprints and contour lines, spot elevations	From predominant elevation of block locations on study area maps, considering contour lines, spot elevations	
First floor above ground/ Elev of Lowest Opening	Survey form or EFS Phase 1 or Phase 2 Task 2 visual observation	EFS Phase 1 or Phase 2 Task 2 visual observation	EFS Phase 2 Task 3 windshield survey	EFS Phase 2 Task 3 windshield survey, and comparison with what is typical for warehouses that returned survey forms	Based on visual observation during residential windshield survey	
Approx bldg sq ft, type of constr mat'l, approx age	Survey form and building footprint mapping	Building footprint mapping sq ft, EFS Phase 2 Task 2 windshield survey, available descriptive GIS data	Building footprint mapping sq ft, EFS Phase 2 Task 3 windshield survey, available descriptive GIS data	Building footprint mapping sq ft, EFS Phase 2 Task 3 windshield survey, available descriptive GIS data	Visual observation during windshield survey	
Estimated depreciated replacement value of bldg	Survey form value or based on square footage, effective age, condition, constr mat1, Marshall & Swift depreciated replacement value	Estimated value based on square footage and valuation data for similar business in study area (similar type,similar square footage, effective age, condition, constr matl) or by Marshall & Swift typical value	Marshall & Swift typical value or estimated based on square footage and valuation for similar business in study area (similar type, similar square footage, effective age, condition, constr matl)	Based on value per square foot from study area warehouse survey data received; or based on estimate using similar square footage, effective age, condition, constr matl or by Marshall & Swift typical value	Initial estimates based on surveyor's real estate market experience during windshield survey. Contact local realtors for typical market value of different types of residences in each area, and also for min and max values for each type;compare values with Marshall and Swift valuations based on square feet, effective age, condition, etc. to verify accuracy	
Elev at which damages to contents begin	Survey form or by visual observation	Assumed to be same as first floor above ground or elev of lowest opening	Assumed to be same as first floor above ground or elev of lowest opening	Visual observation; or typical for warehouse development as obtained from study area warehouse completed survey forms	Same as first floor above ground if no basement/ or elev of lowest opening	
Content Value (Inventory) and Other Value (Computers, Equip., Mach., Misc.)	Survey form	use a content to structure value ratio based on survey data from those businesses with same NAICS code that returned survey forms; or Marshall & Swift valuation for a typical similar business (CCI program)	Marshall & Swift typical value using Commercial Contents & Inventory (CCI) program or unit value per square foot based on surveys from similar businesses	Use a content to structure value ratio based on study area warehouse data received in completed survey forms (uncertainties will be higher for these values)	Use data from EM 1110-2-1619 Table 6-4 if IWR depth damage curves are not used; N/A if IWR curves are used	
Floor Location of Content/Other Investment (beginning damage elevation for contents)	Survey form	Assumed to be same as first floor above ground; comparison with businesses with same NAICS code that returned survey forms	Assumed to be first floor above ground, comparison with businesses surveyed in other Corps studies	Estimated based on study area warehouse completed survey forms	N/A	
Structure Occupancy Type	Direct from survey form	NAICS code determined during EFS Phase 2 Task 1	NAICS code determined after windshield survey, descriptive info	NAICS code determined after windshield survey, descriptive info	1wb, 1nb, 2wb etc. as determined from residential windshield survey	

Attach 2 Continued Data Item	Master List Business (Com, Ind, Pub) Survey Form Returned	Master List Business (Com,Ind,Pub) Survey Form Not Returned	Rest of Study Area Com, Ind, Pub	Rest of Study Area Warehouse (based on square footage of warehouse space per block or partial block, or parcel, if at same elevation and not unique)	Residential (based on groups of like structures at the same elevation in a square block or partial block unless unique)	
Structure Depth-Damage Function	Survey form or application of existing Corps District structure depth percent damage curves (based on type of construction material) to structure value	Application of depth damage function developed from survey data from other businesses with same NAICS code and constr mat1. that returned surveys or application of existing NWK/other Corps district structure depth percent damage curves (based on type of construction material) to structure value	Use MVN, NWK, or other Corps district structure depth percent damage curves; investigate available IWR commercial curves	Use depth damage curves from study area warehouse survey forms returned	For NB structures, use IWR depth damage functions; for WB structures use other Corps District functions	
Content (Inventory) and Other (Equip, Mach., Misc.) Depth Damage	Most likely damage from survey form; or application of depth damage function developed from survey data for other similar businesses that returned surveys; compare with/use existing Corps district content depth percent damage curves for similar businesses	Application of depth damage function developed from survey data from other businesses with same NAICS code that returned surveys; or application of existing Corps district depth percent damage curves for contents in a similar type of business	Use existing Corps district content depth percent damage curves (MVN etc.); investigate any available IWR commercial content curves and use as appropriate	Use depth damage curves from study area warehouse survey forms returned	For no basement homes, IWR curves applied to structure value account for both structure and content damage. For with basement homes, use content value to structure value ratios from EM 1110-2-1619, Table 6-4, and apply NWK/MVN/ other district depth percent damage curves	
Descriptive Data: Name, Address, Phone, Type of Business, Historical Info, Notes and Comments	Survey form, windshield survey, and EFS Phases 1 and 2 notes	Windshield survey and EFS Phase 1 and 2 notes	Windshield survey and EFS Phase 1 notes	Windshield survey and EFS Phase 1 notes	Residential windshield survey	
UNCERTAINTIES:						
Depreciated structure value Uncertainties	Compare survey data estimate with sample Marshall & Swift valuation; compute standard deviation	Use std.dev. developed for Master List businesses that returned surveys	Use std.dev. developed for Master List businesses that returned surveys; use broader ranges of values or larger standard deviations as necessary to account for greater uncertainty	Compare warehouse returned survey data with Marshall & Swift typical values based on square feet, etc.	Investigate and obtain typical market values for different types of structures from local realtors (less land value); use triangular distribution and a range of minimum and maximum values	
Content value Uncertainties	Estimate standard deviation using data from similar businesses if available, or estimate standard deviation based on content to structure value for similar businesses as appropriate	Estimate std. dev. using data from similar businesses if available, or estimate std. dev. based on content to structure value for similar businesses as appropriate; use broader ranges of values or larger standard deviations as necessary to account for greater uncertainty	Estimate std. dev. using data from similar businesses if available, or estimate std. dev. based on content to structure value for similar businesses as appropriate; use broader ranges of values or larger standard deviations as necessary to account for greater uncertainty	Compare warehouse returned survey data with Marshall & Swift CCI typical values for warehouse content.	For NB structures use IWR std. dev.; for WB structures use content to structure value ratio from guidance, and associated std. dev. from guidance (EM 1110-2-1619)	
Other value Uncertainties	Same procedure as for content	Same procedures as for content	Same as for content	Same as for content	N/A	
Struc Elev. Or Beg. Dmg. Elev Uncertainties	Per guidance for 2 & 4 foot contours (EM 1110- 2-1619)	Per guidance for 2 & 4 foot contours (EM 1110- 2-1619)	Per guidance for 2 & 4 foot contours (EM 1110- 2-1619)	Per guidance for 2 & 4 foot contours (EM 1110-2-1619)	Per guidance for 2 & 4 foot contours (EM 1110-2- 1619)	
Depth Damage Function Uncertainties	Use survey min and max damage per foot if provided (triangular distribution); or compare data for similar business in study area with existing Corps district depth damage functions for a similar type of business and develop uncertainty	Use survey min and max damage per foot if provided (triangular distribution); or compare data for similar business in study area with existing Corps district depth damage functions for a similar type of business and develop uncertainty; use broader ranges of values or larger standard deviations as necessary to account for greater uncertainty	Use survey min and max damage per foot if provided (triangular distribution); or compare data for similar business in study area with existing Corps district depth damage functions for a similar type of business and develop uncertainty; use broader ranges of values or larger standard deviations as necessary to account for greater uncertainty	As provided in study area warehouse survey forms returned	IWR no basement curve std. dev.; existing Corps district depth damage functions and associated uncertainties for with basemente structures unless IWR curves are released and available	

U.S. Army Corps of E Kansas City District Feasibility Study: Flood Damage Reduction The Kansas Citys, Missour Metropolitan Area	in ri and Kansas	F E N	Levee Unit <u>CID</u> River Mile Bldg # Map			
	NDUSTRIAL PUBLIC					
				ATTACH BUSINESS CARD		
Street Address						
Town & State						
Name of Person Inter	viewed:					
	Title					
	Telephone #					
Type of Business						
Total Number of Build	lings on Site:	(If more than	one, use additional s	heets.)		
STRUCTURE: Ground Dmg Elev	First Floor Above Ground	i	Elev of Lowest Openi	ing		
Approx Bldg Sq.Ft	*****	Type of Constr.Ma	at'l			
Approx Age/Year Cor	nstructed	Condition	Excellent Good	Fair Poor		
Estimated depreciated	d replacement value of Bเ	uilding \$		(exclude land value)		
CONTENTS:	anugnus sus dun du manteria est d'anterior une de monton de 1000 de la		ere ere jaar mee stelle ja vii ere sterike sterike sterike se ja veidele se st			
Elevation at which dar	mages to contents begin	feet	+ or – from 1 st floor (elevation		
Estimated Content Va	ılues					
	Basement	First Floor	Second Floor & Abo	ove Total		
INVENTORY VALUE						
Value of Office Equip & Computers						
Machinery/Production Equipment Value Other/Misc (describe)		**************************************				

continued on other side

N/A

N/A

SUBTOTAL EQUIP/MACH/OTHER

N/A

ESTIMATES OF FLOOD DAMAGES

	Structure Damages		Inventory Damages			Equip,Mach,Other Damages			
Depth of Flooding on First Floor	Least Possible Damage	Most Likely Damage	Maximum Possible Damage	Least Possible Damage	Most Likely Damage	Maximum Possible Damage	Least Possible Cost	Most Likely Cost	Maximum Possible Cost
+1 ft									
+2 ft									
+3 ft									
+4 ft									
+6 ft									
+8 ft									
+10 ft						,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			***************************************
+12 ft									

HISTORICAL INFORMATION:		
Date of Last Flooding	 Depth of Flooding	***************************************
Amount of damage caused by flood:	\$ 	Total
	\$	Structure
	\$	Inventory
	\$	Equipmen
	\$	Other
COMMENTS:		

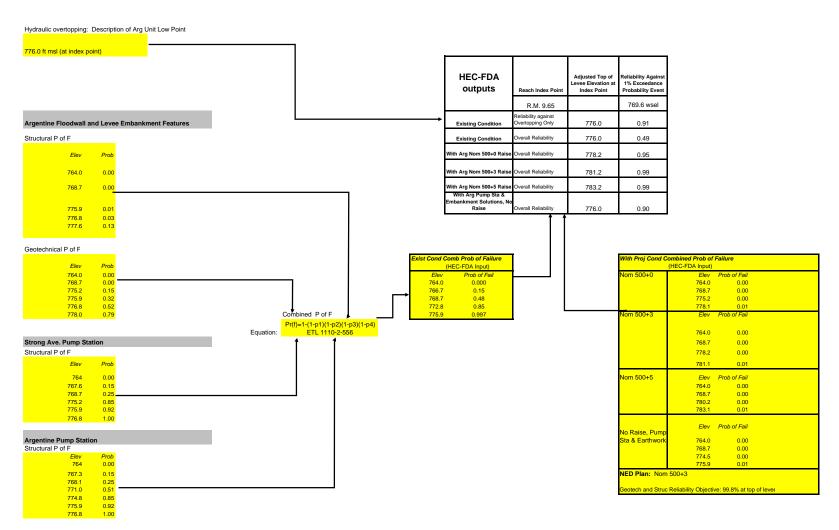
COMMERCIAL/INDUSTRIAL/PUBLIC FLOOD DAMAGE SURVEY

(personal interview) OMB 0710-0001

The public report burden for this information collection is estimated to average 50 minutes per response, including the time of reviewing instructions, searching existing data sources, gathering and maintaining data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or anyother aspect of this data collection, including suggestions of reducing this burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, Virginia 22202-4302 and the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503, Attn.: Desk Officer for U.S. Army Corps of Engineers. Respondents should be aware that notwithstanding any other provision of law, an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. Please DONOT RETURN your completed form to either of these addresses.

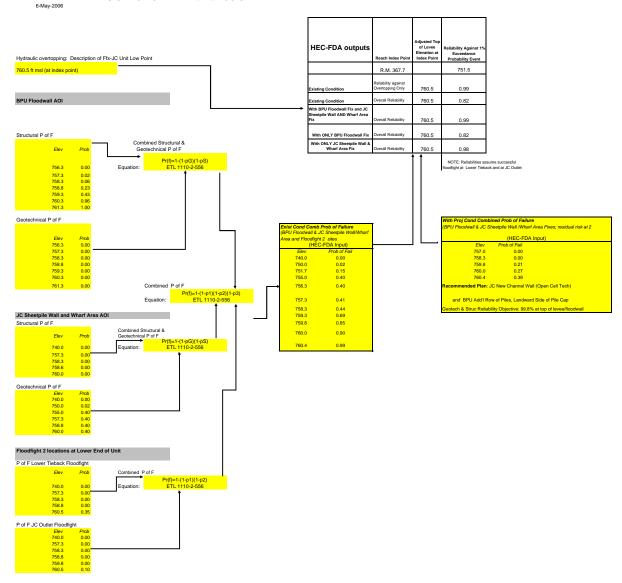
RELIABILITY ANALYSIS FLOWCHART: Argentine Unit

6-May-200



ATTACHMENT 4b

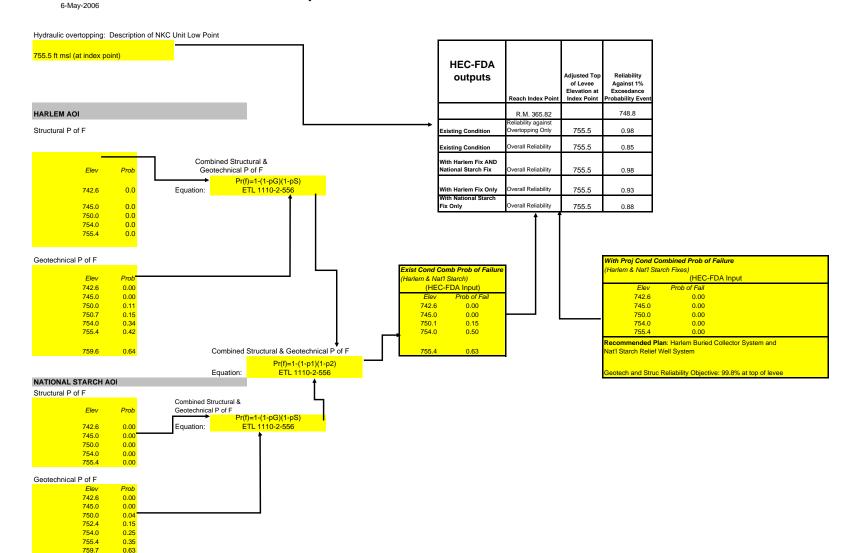
RELIABILITY ANALYSIS FLOWCHART: Fairfax-JC Unit



ATTACHMENT 4b

ATTACHMENT 4c

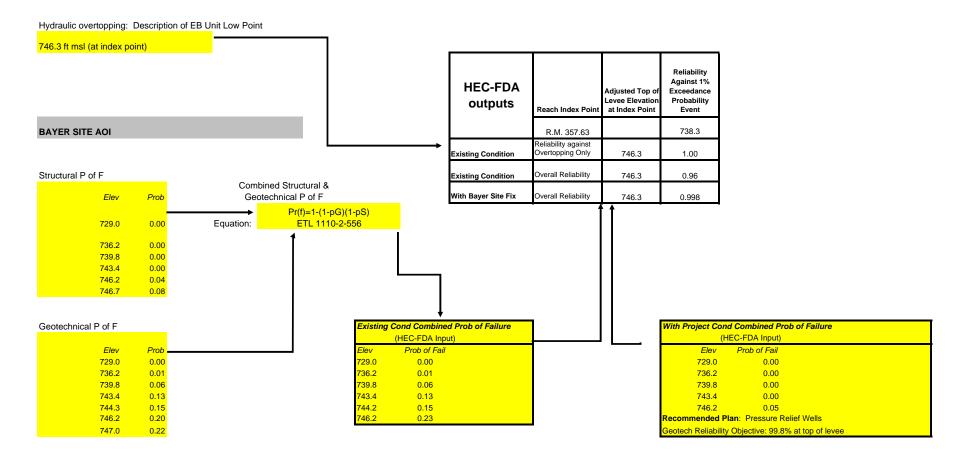
RELIABILITY ANALYSIS FLOWCHART: North Kansas City Unit



ATTACHMENT 4c

RELIABILITY ANALYSIS FLOWCHART: East Bottoms Unit

6-May-2006



RELIABILITY ANALYSIS FLOWCHART: Birmingham Unit

6-May-2006

